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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/842,818	04/27/2001	Marshall H. Mendelsohn	S-92,235	2816

7590 11/05/2002

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EXAMINER

MEDINA SANABRIA, MARIBEL

ART UNIT	PAPER NUMBER
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1754

2

DATE MAILED: 11/05/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/842,818

Applicant(s)

MENDELSON ET AL.

Examiner

Maribel Medina

Art Unit

1754

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,3,5,7,9,11,12 and 14-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☒ Claim(s) 2,4,6,8,10 and 13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

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### **DETAILED ACTION**

#### **Drawings**

1. The drawings are objected to because: The identifier "Fig. 1" should be deleted. See 37 CFR 1.84 (u) (1) *"Where only a single view is used in an application to illustrate the claimed invention, it must not be numbered and the abbreviation "FIG." Must not appear."* Correction is required.

#### **Claim Rejections - 35 USC § 102**

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

3. Claims 1, 3 and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,447,740 B1 (Caldwell et al).

Caldwell et al disclose a process for the removal contaminants such as mercury, SO<sub>2</sub>, NO, NO<sub>2</sub>, H<sub>2</sub>S from flue gas stream. The process comprising contacting the flue gas stream with chlorine in gaseous state at a temperature greater than 100°C and at a sufficient time to form an oxidized form of the contaminants. The oxidized form being more readily removable from the flue gas stream by water absorption than the non-oxidized form thereof. (See col. 1, lines 47-67). No difference is seen between the instantly claimed invention and Caldwell et al disclosure.

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**Claim Rejections - 35 USC § 103**

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 7, 9, 11, 12 and 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caldwell et al.

Caldwell et al disclose a process for the removal contaminants such as mercury, SO<sub>2</sub>, NO, NO<sub>2</sub>, H<sub>2</sub>S from flue gas stream. The process comprising contacting the flue gas stream with chlorine in gaseous state at a temperature greater than 100°C and at a sufficient time to form an oxidized form of the contaminants. The oxidized form being more readily removable from the flue gas stream by water absorption than the non-oxidized form thereof. The oxidized solution is thereafter scrubbed with water, or water solution, of pH less than or equal to 7, and finally an alkali metal iodide solution is added to precipitate mercuric iodide for the water or water solution of pH less than or equal to 7 (See col. 1, lines 47-67).

Caldwell et al disclose the use of gaseous chlorine (instant oxidizing agent) however, fail to disclose the step of claim 7 and 14 of "vaporizing an aqueous solution contain an oxidizing agent" or "vaporizing an oxidizing agent". It would have been obvious to one of ordinary skill in the art at the time the invention was made to have vaporized a source of chlorine (aqueous solution containing an oxidizing agent oxidizing agent) in Caldwell et al process, in order to obtain the gaseous chlorine which is the desired state form of the oxidizing agent in Caldwell et al process.

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In regards to claim 11, Caldwell et al disclose in col. 3, lines 25-32, that the presence of NO<sub>x</sub> in the flue gas enhances the capture of mercury.

In regards to claim 16 and 19, Caldwell et al fail to disclose the ratio of oxidizing agent to mercury or flue gas. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have determine by experimentation the suitable amount of oxidizing agent to be added to the flue gases, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

In regards to claim 18, Caldwell et al fail to disclose the concentration of sulfur oxides in the flue gas stream. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have treated flue gases containing concentrations of up to 4000 ppm as instantly claimed.

**Allowable Subject Matter**

6. Claims 2, 4, 6, 8, 10, and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.


7. The following is a statement of reasons for the indication of allowable subject matter: Claims 2, 4, 6, 8, 10 and 13 disclose allowable subject matter. The closest prior art, Caldwell et al, fails to disclose that: the oxidizing agent comprises chloric acid and an alkali metal chlorate (instant claims 2 and 8); that the oxidizing agent is present in an aqueous solution at a concentration of from 0.01 to 5 weight percent (instant claims 4 and 10); and that the oxidizing agent is an alkaline compound selected from the group consisting of an alkali metal hydroxide,

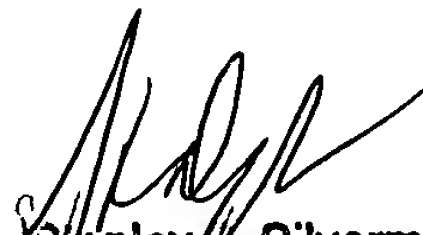
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an alkaline earth metal hydroxide, and alkali metal carbonate an alkali earth metal carbonate and mixtures thereof (instant claims 6 and 13).

**Conclusion**

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to the examiner Maribel Medina. The examiner can normally be reached on Monday through Friday from 8:30 AM to 4:30 PM. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

**Examiner: Maribel Medina**   
**Tel: 703-305-1928**  
**Fax: 703-872-9310**  
**October 28, 2002**

  
**Stanley C. Silverman**  
**Supervisory Patent Examiner**  
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